PROCEEDINGS OF THE
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OF LONDON

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ORDINARY MEETING

WEDNESDAY, 6th April, 1955, at 5.30 p.m.

AGENDA

1. Confirmation of the Proceedings of the Ordinary Meeting held on 2nd March, 1955.
2. Recommendations of candidates for Fellowship. First reading.
3. Recommendations of candidates for Fellowship. Second reading.
4. Announcement of election of new Fellows.
5. Additions to the Library. [See p. 9–10].
6. Admission of Fellows.
7. Exhibits.

Fellows are particularly requested to bring suitable exhibits to the Meeting even though it may not be possible to announce their intention to do so beforehand.

> *Note.*—To avoid congestion in the Library and to enable exhibits to be displayed to greater advantage, a table has been placed in the meeting-room for this purpose. Fellows are asked to place their exhibits on this table with a suitable explanatory note, as soon as possible on the afternoon of the meeting, so that they are available for inspection there before the meeting opens.

8. Communications.

1. Dr. H. E. Hinton.

Sound producing organs in the Lepidoptera.

[ABSTRACT.]

Five quite different types of special organs concerned in sound production are found in the phylum Arthropoda. Of these, Wood-Mason's organ is confined to the Arachnida, but all other types are found in the Lepidoptera, which are the only order of insects known to have as many as four basically different types

of sound producing organs. One of these types is a kind of reed-organ present in some Sphingidae. An organ of this kind does not appear to be known in any other group of arthropods. Sound producing organs are also found in both caterpillars and pupae. Some of the stridulatory organs are of special interest in that a file is constructed by the caterpillar on the inside of the cocoon, but sound is only produced by the pupa, which bears only the scraper.

The functions subserved by the sounds are definitely known in only a few instances, where they are either defensive or sexual. The most interesting sound receptors are the tympana. These are almost entirely confined to night-flying moths, amongst which they have been independently evolved on at least seven occasions. The tension of the tympanal membrane can be altered by muscles. In some groups a special musculature has been evolved which would seem to serve no other function than that of altering this tension. In view of the presence in night-flying moths of a sound producing organ (often of the tymbal type), together with a special apparatus for cutting out reception, it would be interesting to see if these moths employ echolocation in avoiding obstacles.

2. Mr. Dennis Leston and Mr. P. T. Haskell.

Sound production in terrestrial Hemiptera-Heteroptera :
an introductory study.

[ABSTRACT.]

Sound production, or an apparatus which has this function, occurs in many or most members of Tessaratomidae, Pentatomidae, Scutelleridae, Cydnidae, Coreidae, Piesmatidae, Reduviidae, Aradidae and Saldidae. The authors now add Lygaeidae and Aepophilidae to this list. The apparatus is of diverse types but the most widespread consists of a modified wing-vein (strigil) and a dorsal plectrum ; in Pentatominae *sensu str.* the apparatus has not yet been identified. The Reduviid apparatus, a rugose prosternal furrow and rostral plectrum, occurs in larvae and imagines of both sexes and is probably primarily defensive in function. In other families sound production occurs in imagines of both sexes (all Cydnidae, Piesmatidae, Kleidocerys (Lygaeidae)) or males only (Pentatominae *sensu str.*, Saldidae, Aepophilidae) : its function is probably associated with the formation of heterosexual aggregations and, a separate call in Pentatominae, with courtship.

Tape recordings, oscillograph analyses and photographs have revealed the differences between calls and also their composition in terms of frequency and other physical measurements. The problem of sound perception in Heteroptera has been studied.

Tea will be served in the Library before the meeting.

PROCEEDINGS OF THE ORDINARY MEETING HELD ON 2ND MARCH, 1955.

Dr. W. J. Hall, C.M.G., M.C., President, in the Chair.

Present : 87 Fellows and 19 Visitors.

Before the meeting formally opened the President expressed his appreciation of the honour Fellows had conferred upon him in electing him to the office of President.

The President announced that the new ventilation system, to which reference was made at the Annual Meeting, was in operation for the first time and Fellows were asked to take note of conditions in the meeting room so that any faults could be rectified.

The President extended a welcome to Dr. E. T. Nielsen of Florida, well known for his work on mosquitoes and on the migration of butterflies.

The minutes of the Ordinary Meeting held on 19th January, and of the Annual Meeting held on 2nd February, were confirmed and signed by the President.

The President announced that he had appointed Mr. R. F. Bretherton, C.B., Dr. K. Mellanby, C.B.E., and Mr. H. B. Williams, Q.C., as Vice-Presidents for the coming year.

The names of the following candidates for election were read for the first time : Mr. Howard Leslie Glendower Boyce ; Mr. Roderick Campbell Fisher ; Mr. Charles Fitzroy Griffith, B.Sc., A.R.I.C., F.R.M.S. ; Mr. Graham Charles Douglas Griffiths ; Mr. Derek Baillie Janson ; Mr. B. P. Mehra, M.Sc. ; Miss Ivy Bernice Baker Mell, B.Sc. ; Mr. Talib Ali Omardeen ; Mr. Arthur Poo Nyo, B.Sc., M.Sc.

For the second time (taken as read) : Dr. George E. Ball ; Mr. Russell Badham ; Mr. Alexander Claude Brown ; Mr. Derek Bryce ; Mr. William E. Collinson ; Mr. Dale Latham Jackson ; Mr. George Arthur Turner Jeffs ; Mr. Alan Pringle ; Professor V. Tirumala Rao ; Mr. Arthur Lewis Reid ; Mr. David Mason Robinson ; Mr. Tudor C. E. Thomas ; Mr. Richard Arthur Tribbeck.

The Secretary read the names of the following newly elected Fellows of the Society : Dr. Carlos d'Andretta, Jr., Faculdade de Farmacia e Odontologia da Universidade de São Paulo, Rua Tres Rios, São Paulo, Brasil ; Mr. Saiyid Abdul Aziz, Department of Zoology and Applied Entomology, Imperial College of Science and Technology, Prince Consort Road, London, S.W.7 ; Mr. James T. Davey, c/o Anti-Locust Research Centre, British Museum (Natural History), Cromwell Road, London, S.W.7 ; Miss Shahzaman Husain, Department of Plant Protection, Block 52, Karachi, Pakistan ; Mr. Maheshwari Prasad Singh, Department of Zoology, School of Agriculture, University of Nottingham, Sutton Bonington, Near Loughborough, Leicestershire ; Mr. Bryan David Smith, c/o 6, Ranelagh Gardens, Stamford Brook Avenue, London, W.6 ; Mr. Gerald Ernest Woodroffe, Pest Infestation Laboratory, London Road, Slough, Bucks.

Thanks were voted to donors of gifts to the Library since the last meeting.

Mr. S. A. Aziz, Mr. R. K. Farmer, Mr. D. L. Johns, Mr. P. Makings, Dr. E. T. Nielsen, Mr. R. H. Simons and Mr. G. T. Tonapi signed the Obligation Book and were admitted Fellows of the Society.

Mr. J. Balfour-Browne exhibited a series of 7 ♂, 14 ♀ of *Hagenomyia tristis* (Walker) [Neuroptera : Myrmeleontidae], portion of an immense aggregation of about 2000 specimens which he had observed near Lake Fundudzi, Zoutpansberg Mountains, Northern Transvaal, in April, 1954.

This aggregation was first seen about mid-day ; many individuals were still flying in the same spot four hours later. It is unusual to find such crepuscular insects flying in daylight and so far as can be ascertained no previous record of such an aggregation has been announced.

An assumption that this was a " mating-swarm " is pure conjecture, no pairs being found *in copula* ; nor is it likely that such a behaviour in a normally solitary group could have failed to be observed.

The site of the aggregation was in regenerating bush in fringing riverine forest, the overhead canopy being unbroken. The nearest observed larval burrows were some 100 yards distant in the hard earth of path-trails. No " assembling " to the aggregation was to be seen from distant places.

The Secretary recalled that at the November meeting **Dr. P. J. L. Roche** had spoken on some observations he had made on the processionary habit of the larvae of the Pierine butterfly *Mylothoris chloris* F. (*Proc. R. ent. Soc. Lond.* (c) **19** : 39). Dr. Roche, who had now returned to Nigeria, had since been able to study a further brood on the same tree and had written as follows :

" 1. The food-plant is definitely *Loranthus*, a mistletoe growing at the top of the tree.

" 2. This brood does not keep to such rigid times as the earlier one, ascending at any time after 3.0 p.m. and descending between dawn (at about 7.00 a.m.) and 9.30 a.m.

" 3. The formation was not quite so regular as in the earlier brood. They would go up or down the tree in batches of 12 to 30 larvae at different times, but always each batch would be a head-to-tail procession.

" 4. My claim to originality was a bit premature. *Mylothris agathina* Cr. is now regarded as the East African race of *M. chloris* F. Under *M. agathina*, Aurivillius *in* Seitz (Vol. 13, p. 34) writes : ' Larva . . . lives on a species of *Loranthus* and wanders about like the processionary larva.' Further, his brief description of *agathina* larva agrees with my description of *chloris* larva. Thus my observations on *M. chloris chloris* strengthen considerably the view that the East African creature is in fact ' *M. chloris agathina* ' and not a distinct species."

Professor G. C. Varley exhibited specimens of living Protura (*Acerentomon* sp.) taken by Mr. P. J. Osborne from rotten wood at Wytham, Berks., on 25th February, 1955. Dr. C. B. Williams recalled that he believed he was the first person to exhibit Protura at a meeting of the Society [4th February, 1914] and said that Dr. Rao had been finding these insects in soil samples at Rothamsted in considerable numbers. Dr. B. M. Hobby mentioned that he had also found specimens near the same locality in Berkshire and Mr. H. E. Goto reported having recently come across them in moss.

Mr. D. S. Fletcher gave a talk, illustrated by lantern slides, on the expedition he had made to Ruwenzori on behalf of the British Museum (Natural History) in the summer of 1952.

A short discussion followed. Professor O. W. Richards having mentioned that wingless flies occurred in these habitats and he was interested to know the conditions in which they lived, Mr. Fletcher explained that where the forest was thick the ground was covered with deep moss but in the more open glades there was only a light covering of moss and the ground was sodden.

Mr. Fletcher said, in reply to an enquiry by Dr. Hobby, that no insects had been found on the snow fields.

Mr. C. N. Hawkins recalled that Dr. Hugh Scott had found Noctuid larvae on tree lobelias in Abyssinia. Mr. Fletcher said that, although the lobelias were beaten, no Noctuid larvae were found.

Miss Longfield referred to the variation in the height at which the different vegetational belts begin in Africa, and enquired whether the zones were higher on Ruwenzori than elsewhere. Mr. Fletcher said this subject had been dealt with fully in a paper by Hedberg in which the belts in all mountains in Africa were compared. [Hedberg, O., 1951, *Svensk. bot. Tidskr.* **45** : 140–202.]

The President having enquired whether there was any possibility of correlating the fauna of the various vegetational layers on Ruwenzori and other mountains of East Africa, Mr. Fletcher replied that work was now going on to this end.

Dr. C. B. Williams showed a short film of light trap and suction trap work at Rothamsted Experimental Station.

In reply to enquiries, Dr. Williams said that flightless insects were very rarely found in the traps. There appeared to be a lunar periodicity in the catches in both types of trap.

E. B. BRITTON, *Honorary Secretary.*

The next meeting will be held on 4th May at 5.30 p.m.

ADDITIONS TO THE LIBRARY.

Presented.

Arrow, G. J. *Fauna of India, including Pakistan, Ceylon, Burma and Malaya. Coleoptera Lamellicornia vol.* 4. *Lucanidae and Passalidae.* 8vo. London 1950. [The High Commissioner for India.]

Eastham, L. E. S., and Eassa, Y. E. E. The feeding mechanism of the butterfly *Pieris brassicae* L. *Phil. Trans.* (B) **239** : 1–43, 1955. [Royal Society.]

Hungtingdonshire Fauna and Flora Society. *5th–7th Annual Reports.* Small 8vo. Huntingdon. 1953–55. (Contain articles on Lepidoptera by J. E. H. Blackie.) [Mr. J. E. H. Blackie.]

Moseley, *Sir* Oswald, *Bart. The natural history of Tutbury.* Large 8vo. London. 1863. [Miss B. E. Brown.]

Annales and *Bulletin* of the Société Linnéenne de Lyon. 40 parts in all. 1929–45. [K. St. G. Cartwright, Esq.]

Purchased.

Bertrand, Henri. *Les insects aquatiques d'Europe.* 2 vols. 8vo. Paris. 1954. [*Encycl. Ent.* (A) **30, 31**.]

Brauns, A. *Puppen terricoler Dipterenlarven.* 8vo. Göttingen, etc. 1954.

Cheshire, North and Mid-Wales Natural History. Vol. 5. 8vo. Chester. 1954.

Ford, E. B. *Moths.* 8vo. London. 1955. [*New Naturalist.*]

Jeannel, R. *Les fossiles vivants des cavernes.* 5th edn. 8vo. Paris. 1949.

Lhomme, L., *and others. Catalogue des Lépidoptères de la France et de la Belgique.* Pp. 969–1048. 8vo. Paris [195–.]

Titschack, Erich, *ed. Beiträge zur Fauna Perus.* 4 vols. 4to. Jena. 1951–54.

In addition, separates have been presented by Professor E. E. Edwards; Dr. J. L. Cloudsley-Thompson; Mr. G. Williams; United States Department of Agriculture; State Plant Board of Florida; Professor P. A. Buxton, C.M.G., F.R.S.; Professor W. Roepke; Brigadier J. A. Sinton, V.C.; Miss B. E. Brown; Mr. J. D. Bletchly; Instituto Nacional de Entomologia, Maracay, Venezuela; American Entomological Society; Mr. W. V. Harris; Publications Officer, Forestry Commission; Mr. B. R. Stuckenberg; Dr. A. M. Massee; The Director, Liverpool Public Museums; Mr. I. F. B. Common; Professor C. L. Remington; Dr. W. Dwight Pierce; and Professor Hermann Weber.

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